

The Effect of PLT® on Broiler Performance, Litter pH, and Ammonia Control During Summer



PLT® Field Trial Summary

This field trial determines the effects of PLT® during the summer on broiler performance, reduction of fuel costs, litter pH, and ammonia control.

Three Delmarva broiler farms were used with two houses on each farm. In house 1, the litter was treated once before bird placement with PLT® at a rate of 50 lbs. PLT® per 1,000 sq. ft. of floor space. House 2 on each farm was used as a control and the litter was left untreated. Breeder flock sources were paired in all houses to reduce variables. Equipment and management was identical in all houses.

Ammonia was significantly reduced immediately in the treated houses (avg. 99% reduction). Ammonia was reduced over time in the untreated control houses by increasing ventilation and this is illustrated by up to 74% fuel savings in the treated houses vs. controls.

Litter pH was significantly reduced in the treated houses (avg. reduction from 8.3 down to 1.5). With reduction of ammonia and litter acidification resulting in a better poultry house environment, all measured parameters of bird performance were significantly better in the treated houses.

Final Report

Project Number: JHF-1-95
Project Title: Poultry Litter Treatment (PLT®)
Summertime Effect on Broiler Performance,
Litter pH, and Ammonia Control
Location: Delmarva Broiler Farms
Duration: June 1995 to September 1995
Final Report by: Dr. Mac Terzich, November 1995

Objective

Determine the effects of PLT® on summertime broiler performance, ammonia control, fuel savings, and litter pH.

Protocol

Three, 2-house broiler farms were used for this trial. PLT® was applied to the litter at the rate of 50 lbs./1,000 sq. ft. to the whole house in one of the two houses on each farm, the other house served as the untreated control. Both houses had built-up, used, wood shavings litter. No disinfectants or insecticides were used on the farms within 24 hours before treatment. Birds were placed in each house equally by breeder flocks on all farms.

Litter pH and ammonia levels were determined before and after PLT® application

Results

Litter pH and Ammonia Control

All data is separated by house to compare treatment efficacy.

Farm A

Treatment Date: June 9, 1995

House	Date	Treatment PLT®	Ammonia (ppm)	Litter pH
1 -- Before Treatment	June 9, 1995	50 lbs./1,000 sq.ft.	160	8.5
1--Immediately After Treatment	June 9, 1995	50 lbs./1,000 sq. ft.	10	1.3
2--Placement	June 9, 1995	None-Control	160	8.5
1--Day 10 Off-Chamber	June 20, 1995	50 lbs./1,000 sq. ft.	60	6.9
1--Day 10 Brood Chamber	June 20, 1995	50 lbs./1,000 sq. ft.	20	7.4
2--Day 10	June 20, 1995	None-Control	40	8.1

Farm B: Double Deck Houses

Treatment Date: July 4, 1995

House	Date	Treatment PLT®	Ammonia (ppm)	Litter pH
2-Top	July 4, 1995	None- Control	65	8.2
2-Top--8 Days Post-Treatment	July 12, 1995	None-Control	35	8.9
2-Bottom	July 4, 1995	None-Control	100	8.4
2-Bottom--8 Days Post-Treatment	July 12, 1995	None-Control	25	8.4
1-Top--Before Treatment	July 4, 1995	50 lbs./1,000 sq. ft.	100	8.1
1 Top--Immediately After Treatment	July 4, 1995	50 lbs./1,000 sq. ft.	0	1.7
1 Top--8 Days Post-Treatment	July 12, 1995	50 lbs./1,000 sq. ft.	0	4.7
1-Bottom--Before Treatment	July 4, 1995	50 lbs./1,000 sq. ft.	100	8.4
1-Bottom--Immediately After Treatment	July 4, 1995	50 lbs./1,000 sq. ft.	0	1.9
1-Bottom--8 Days Post-Treatment	July 12, 1995	50 lbs./1,000 sq. ft.	10	4.1

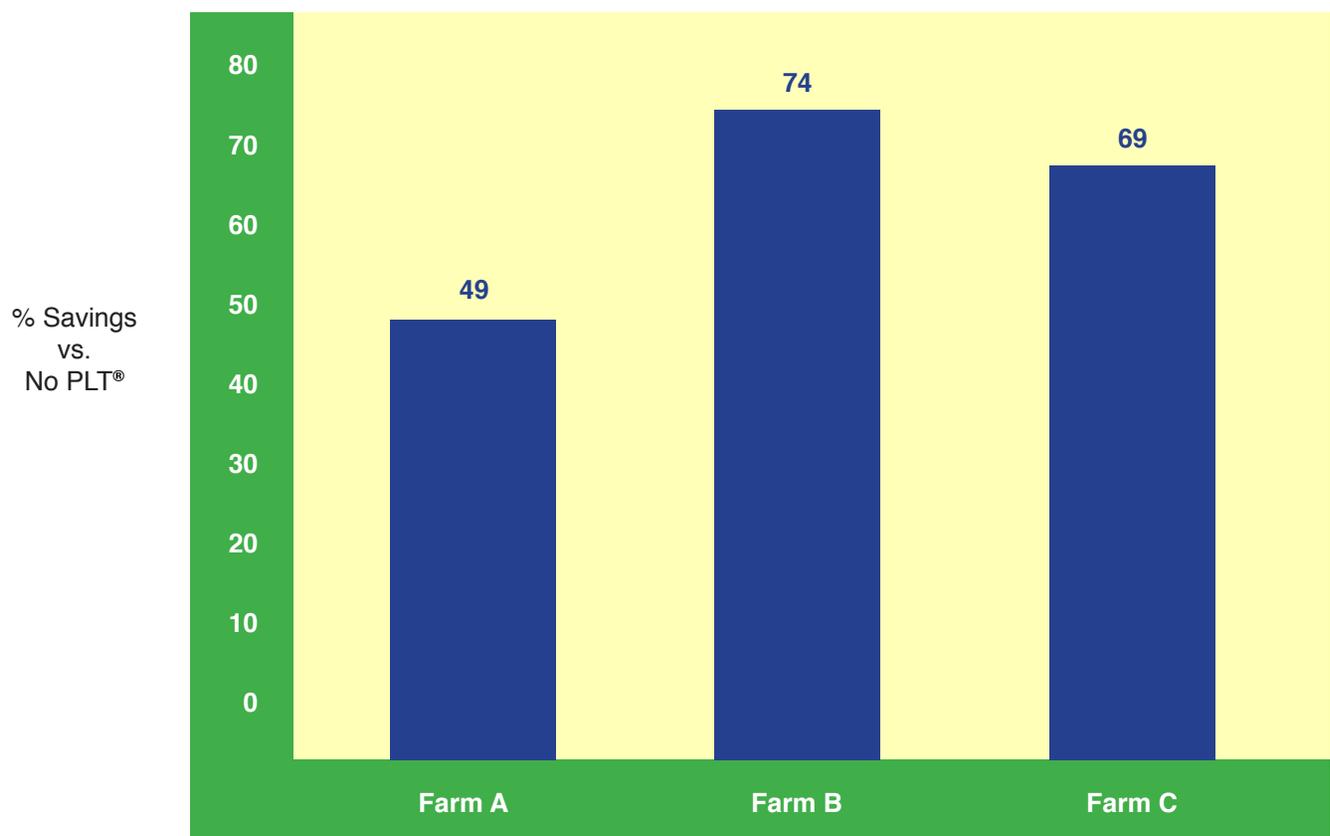
Farm C

Treatment Date: July 28, 1995

House	Date	Treatment PLT®	Ammonia (ppm)	Litter pH
1-Before	July 28, 1995	50 lbs./1,000 sq. ft.	100	8.0
1-After	July 28, 1995	50 lbs./1,000 sq. ft.	0	1.6
2	July 28, 1995	None-Control	120	8.4
1-7 Days After	August 4, 1995	50 lbs./1,000 sq. ft.	20	4.3
2-7 Days After	August 4, 1995	None-Control	160	8.4

Fuel Savings for Entire Grow-out Period (7 Weeks)

July & August 1995



Bird Performance Results

Farm, House, Treatment	% Livability Livehaul*	2 wk % Mortality Grower	Total % Mortality Grower	Total Condm.	Leukosis %	Sep Tox %	Airsac %	IP %	Avg. Wt. Lbs.	Adjusted Feed Conv.
Farm A										
1-PLT®	97.4	0.55	2.60	0.43	0	0.13	0.10	0.01	4.98	1.872
2-Control	93.1	1.78	6.57	3.29	0.23	1.43	0.98	0.23	4.40	2.145
Farm B										
1-PLT®	96.3	0.87	2.50	0.93	0.04	0.11	0.12	0.05	4.93	2.025
2-Control	94.7	1.30	3.97	1.20	0.15	0.25	0.16	0.08	4.62	2.056
Farm C										
1-PLT®	96.5	0.60	2.89	1.15	0.02	0.10	0.43	0.01	4.59	1.960
2-Control	94.8	0.67	3.97	2.67	0	0.22	0.79	0.02	4.26	1.894

*Note that live haul mortality numbers are often inaccurate because live haul crews are paid by the number of birds caught and there is an incentive for inflated numbers. The grower number for mortality is usually the actual number of mortality.

The septic toxemia condemnations category tends to be a catch-all category for the USDA inspectors in the processing plant. Birds may be counted in this category if they are diseased, too small, aren't bleed out properly during processing, or for many other miscellaneous reasons. Infectious process condemnations refer to Infectious Process also known as cellulitis, an infection of the bird in the tissues under the skin. This is caused by poor hatchery conditions when chicks don't have proper navel closure and bacteria invade to cause cellulitis, or it can be caused by skin scratches in older birds that subsequently become infected.

Adjusted feed conversion means the feed conversion is adjusted to an equal weight so that a fair comparison can be made of birds with various weights.

Discussion and Conclusions

Farm A

House 1 was the PLT[®] treated house and house 2 was the untreated control. There was a 94% reduction of ammonia in house 1 from before PLT[®] application to immediately after application and an 88% reduction from before application to day 10. These houses are divided into three sections (chambers). The center chamber is used to place chicks and brood them for the first 2 weeks until they are moved into the second chamber for the next 7 to 10 days before the birds have access to the entire house. This practice of partial house brooding is done for fuel and feed savings. In this trial, PLT[®] was applied to the entire house at the same time.

Litter acidification was significant initially after PLT[®] application in house 1. By day 10 the pH of the litter increased, but was still lower than the litter pH of house 2.

Fuel costs were significantly reduced in the treated house compared to the control house when averaged over the entire grow-out. During the summer, relatively small amounts of fuel are used, but there is a significant benefit of using PLT[®].

Performance comparisons between the two houses shows an advantage for PLT[®] treated house 1. All parameters are improved in the PLT[®] treated house.

Farm B

Houses on this farm are double decked, house 2 was the untreated control and house 1 was used as the PLT[®] treated house. Ammonia control was 100% in both the top and bottom of house 1 when comparing readings before and immediately after PLT[®] application. Ammonia in the control house reduced from day 1 to day 8. This is due to the fact

that ventilation was increased dramatically in this house to vent off the excess ammonia. This can be seen in the fuel savings comparison of house 1 with house 2. There was a savings of 74% in fuel costs favoring the PLT[®] treated house. To achieve reduced ammonia levels, significantly more fuel was used in house 2 than house 1 without reaching the same level of complete control observed in house 1.

Litter acidification was seen in house 1 with a significant lowering of litter pH immediately after PLT[®] application and still at day 8.

The top and bottom sections of the houses are combined for bird performance data. Bird performance favors the treated house in all categories.

Farm C

Ammonia control was 100% initially and 80% after 7 days in house 1, the PLT[®] treated house. The pH was also dramatically lowered in house 1 and stayed below the control house at 7 days.

Fuel savings were significant in the treated house compared to the control with 69% savings averaged over the entire grow-out period. Bird performance was better in all categories.

Conclusion

In conclusion, this trial has shown that PLT[®] significantly and consistently lowers ammonia and litter pH and this translates to significant fuel savings during summertime broiler production.

PLT[®] is a significant factor in decreasing costs and increasing revenues during the summer.

